

Engineering Tech

At a Glance

Engineering techs provide engineers with the technical support to turn ideas into reality. They can work in many industries, such as construction, science, and tech services.

16 Career Clusters

Architecture & Construction

Manufacturing

Science, Technology, Engineering & Math

Earnings

Earnings Range: 25K - 75K

Level of Education

- 2-Year College or Technical Training

Core Tasks

- Set up and repair technical equipment
- Prepare and conduct experiments, collect data, and record results
- Use computer software to produce detailed plans and three-dimensional drawings
- Estimate project costs and specify materials to be used
- Some work in quality control

Attributes & Abilities

- Analytical
- Math skills
- Problem-solving skills
- Communication skills
- Work well with your hands

Workplace

- Employed by manufacturing, professional, scientific, and technical services companies
- Work in offices and on job sites or factory floors
- May work outdoors, depending on their position
- May work in noisy, dirty factories
- Most work a 5-day, 40-hour week, but overtime is sometimes necessary

Job Description

Engineering techs have special knowledge of science, engineering, and math. They use their skills to help engineers with a variety of projects.

Techs tend to have specific and practical tasks. Their advice is highly valued by engineers. They can help with many types of work. For example, techs help to design new machines and construct buildings. They can even plan how much it will cost to build a new plant.

Specific duties for techs depend on the job. For example, techs may be in charge of setting up and fixing equipment. They may prepare and conduct experiments. They also collect data and record results.

Sometimes techs assist with design work. They use computer-aided design (CAD) software to produce 3D images. They may also create prototypes of the design. Other techs work in quality control roles.

Techs can be experts in many areas. Civil engineering techs design and build highways, buildings, bridges, and dams. They are also involved in surveys and studies. Some inspect water plants to check toxin levels. Others add up costs and decide what materials to use for a project.

Electrical and electronics techs help develop, create, and fix equipment. They may work on TVs, radar, sonar, and computers. They use special devices to test, adjust, and repair the small parts in electronics.

Industrial techs study the use of resources. These may include people, materials, and machines. They assess the needs in factories, stores, warehouses, and offices. They may need to prepare layouts of machinery and gear, study statistics, and analyze costs. Techs must also know how to plan the workflow for a project.

Finally, mechanical techs help design machines and other devices. Before production, they prepare layouts and make sketches of the assembly process and parts. They also record data, assess results, and write reports. They estimate labor costs, how long parts will last, and plant space. Some test and inspect machines. Others work with engineers to reduce problems in plants.

Techs can also work in the chemical, mining, or petroleum sectors.

Working Conditions

Techs work in many industries, including:

- construction
- professional
- scientific
- technical services
- government agencies

Techs work in various settings and situations. Some work alone. For example, they might service machines at customers' work sites. Others work in production or inspection jobs.

Most techs work 8 hours a day, and 40 hours a week. Overtime may be required if there are deadlines. Those involved in manufacturing may work some night or swing shifts.

Although their tasks can vary, techs don't usually sit at a desk all day. A lot of their time is spent on job sites. They often meet with crew members, engineers, or architects. They may need to discuss machinery, labor strategy, and safety standards.

Earnings

New engineering techs may earn as little as \$30,000 a year. Senior-level techs at large companies can make \$100,000 a year or more.

Techs' salaries depend partly on their area of focus. For example, the median income for environmental techs is about \$49,000 a year. For aerospace engineers and operations techs it is \$68,000 a year.

The median salary for civil engineering techs is about \$50,000 a year. It's around \$53,000 a year for industrial engineering techs and \$54,000 a year for mechanical engineering techs. Electrical and electronic techs earn about \$62,000 a year.

Salary also depends on techs' experience and location.

Full-time techs usually also get benefits. These can include health insurance, paid vacation, and paid sick days. They may also get a pension plan.

Massachusetts Wages

Earnings and outlook information is not available for this occupation.

Education

If you'd like to be an engineering tech, study math and science. Usually, you must complete at least a 2-year associate degree in engineering technology. Bachelor's degree programs are also available. These programs take about 4 years to complete.

Those with bachelor's degrees are often hired as technologists. Technologists have more years of study than a technician. This gives them a broader knowledge base. It also allows them to perform a wider range of tasks.

Programs are offered by technical and vocational schools. They're also available at 2 and 4-year colleges. You can specialize in one of many areas of engineering, such as:

- civil
- electrical
- electronic
- industrial
- mechanical
- environmental

The type of courses you'll take depends on your area of focus. Schools usually offer courses in both theory and practice. For example, mechanical tech students may take courses in fluid mechanics and thermodynamics. They may also study marine, aircraft, and industrial equipment repair.

The quality of the programs can vary. It's a good idea to look for an accredited program. It should be verified by the Accreditation Board for Engineering and Technology (ABET).

Certification is offered by the National Institute for Certification in Engineering Technologies (NICET). Although it is voluntary, it will help you to compete for a job.

Related College Programs

- Engineering Technology, General

Other Suggested Qualifications

Although engineering techs work in various specialties, most of the skills they require are the same. For example, they need analytical and mathematical skills to solve complex problems. In addition, since they usually work in teams with engineers and other professionals, they must be able to communicate well. Engineering techs must also have the manual dexterity needed to perform the hands-on aspects of their jobs, such as repairing or redesigning machinery. Voluntary certification is available through the National Institute for Certification in Engineering Technologies (NICET). Certification may give workers a competitive advantage in the workforce.

Sample High School Program of Study

This Program of Study can serve as a guide, along with other career planning materials, as learners continue on a career path. Courses listed within this plan are only recommended coursework and should be individualized to meet each learner's educational and career goals.

Engineering and Technology Science, Technology, Engineering & Math

Grade 9	Grade 10	Grade 11	Grade 12
English/Language Arts			
English/Language Arts I	English/Language Arts II	English/Language Arts III	English/Language Arts IV

Grade 9**Grade 10****Grade 11****Grade 12**

Math			
Algebra I or Geometry	Geometry or Algebra II	Algebra II or Trigonometry Pre-Calculus or Statistics	Trigonometry or Pre-Calculus/Calculus or AP Calculus or Math Analysis
Science			
Biology	Chemistry	Physics	AP Science or Structured Computer Program Language
Social Studies/Sciences			
State History Civics	U.S. History	World History World Geography	Economics Entrepreneurship
Career & Technical Courses			
Introduction to Engineering Design	Principles of Engineering or Information Technology Applications	Product Engineering and Development Digital Electronics	Civil Engineering and Architecture Engineering Innovation

States' Career Clusters Initiative, 2008, www.careerclusters.org.

Important

- Check with your advisor to make sure that your course selections satisfy your graduation requirements.
- Courses available may vary from school to school.

Sample Career Path

People take different pathways through their careers, but no one starts at the top. This is an example of how the earnings, education and experience requirements, and responsibilities might progress for someone in this occupation.

Level 1

Sample Title	Entry-Level Engineering Tech
Earnings	\$25,000 to \$35,000 a year

Level 1

Requirements	• Completion of an engineering technology degree program
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Responsibilities	Developing engineering designs and drawings; researching cost and material estimates for engineering projects; conducting tests and analyses of machines, components, and materials to determine their performance (such as strength and response to stress); inspecting work sites which might include construction sites, water supply systems, or manufacturing plants; assisting engineers and senior engineering techs. Responsibilities will vary according to an engineering tech's area of specialization.
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Level 2

Sample Title	Engineering Tech
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Earnings	\$30,000 to \$50,000 a year
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Requirements	• At least 2 years of work experience in an engineering technology field • Possibly certified
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Responsibilities	Developing engineering designs and drawings for more complicated projects; researching cost and material estimates for larger engineering projects; conducting tests and analyses of machines, components, and materials; inspecting and supervising work sites. Responsibilities will vary according to an engineering tech's area of specialization.
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Level 3

Sample Title	Project Manager
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Earnings	\$50,000 to \$75,000 a year or more
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Requirements	• 5 to 10 years of work experience in an engineering technology field
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Responsibilities	Taking care of administrative responsibilities (scheduling and job assignment); managing staff; preparing contracts and documents; supervising, monitoring, and inspecting mechanical installations and construction projects.
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Related Careers

Here are some other occupations that you might be interested in. Click on an occupation name to learn more.

- Biological Tech
- Chemical Engineering Tech
- Civil Engineering Tech
- Drafter
- Electrical Engineering Tech
- Electronics Engineering Tech
- Environmental Technician
- Industrial Engineering Tech

- Mechanical Engineering Tech
- Petroleum Engineering Tech
- Survey Tech
- Technical Sales Representative

Career Clusters

Career Clusters are groups or families of occupations that share common characteristics such as knowledge requirements, skill sets, and/or goals.

Architecture & Construction

Manufacturing

Science, Technology, Engineering & Math

National Employment by Industry

Industry	% Employed
Manufacturing	
Professional, Scientific, and Technical Services	
Government	
Information	
Administrative and Support and Waste Management and Remediation Services	

Source: O*Net Online, Browse by Industry, US Department of Labor
<http://online.onetcenter.org/find/industry>

Other Resources

TryEngineering – Engineering Technology Majors

Find helpful career and educational resources here for anyone interested in engineering technology.
<http://www.tryengineering.org/become-an-engineer/engineering-technology-majors>

ABET – Explore Technical Careers

ABET accredits post-secondary programs in engineering and technology and promotes a high quality in education. Here you can discover different career options.
<http://www.ecei.org/explore-technical-careers>

eGFI – Dream Up the Future

The American Society for Engineering Education (ASEE) created this website for students interested in learning more about engineering and engineering careers.
<http://www.egfi-k12.org>

American Society of Certified Engineering Technicians (ASCET)

This national professional society represents engineering technicians and technologists in all engineering disciplines. Visit the Regions/Chapters section to find an ASCET chapter near you.
<http://www.ascet.org>

